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January 14, 1964

re: Measuring Techniques.

Bob, when I was in your office last December, we discussed briefly some measuring techniques. You mentioned you had received a proposal to use some mechanical property of quartz for submicron measurement of distance, I think it was. We didn't really have a chance to finish our conversation and I can't recall the details. As I remember, it sounded as though it might have some problems associated with obtaining glass of sufficient uniformity, but the idea was perhaps promising enough to look into.

While your thinking about that, you might consider another possibility. STATINTL has proposed a device to, I think, STATINTL to develop a device to make submicron measurements. They plan to use a light beam of a Laser and since it is coherent they can count light waves. They didn't go into details, but they think they can get a least count of 0.15 microns. I'm sure STATINTL would give you the details if you asked him, and I think you should consider it.

On the other hand, since STATINTL is already well into a program to measure with a least count of 0.25 microns, is it worth while investing in other investigative work? STATINTL also has an advantage of many ~~experience~~ years of experience in measuring and they have highly developed electronics which are stable and dependable. The electronics are probably 70% of the battle. Perhaps other work should ~~only~~ be under taken only if it shows promise of being considerably cheaper in its application to production machines and also retains the two significant features of the STATINTL system: i.e. non-ambiguity of count and no limitation of the traverse velocity.

These are some thoughts I had on the subject. I can't answer the question I posed above, but I would be glad to discuss it with you next time we get together.

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January 9, 1963

Digital Readout Comparator

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STATINTL expected to deliver the first of the two systems before Christmas. In the last stages of final check-out however, they had difficulty with their parity check, particularly the vertical parity check.

STATINTL the engineer and the STATINTL Technician discovered the problem from examination of the magnetic tape on which they were recording the output of the "send data lead".

In order to examine the output, they record the outgoing pulses on the a tape recorder. They make the STATINTL pulses on the tape visible by immersing it in an iron oxide solution made for the purpose by STATINTL . called Magna See.

The parity errors were difficult to trace and it took them quite a while to find the source of the problem. They finally found there were small variations in the voltage levels of the pulses on the send data lead due to small variations in the impedances of the circuits. The difficulty was corrected by rebiasing the drives.

STATINTL reemphasized that they cannot adequately check the performance of the error or acknowledge pulses to be received by the system from the computer because they don't have a dataphone. They are very anxious to be kept posted by the user on any problems that arise. They seem quite confident that the system will ing general perform well and have a long and trouble free life.

The Company should be congratulated on their consciencious and thorough check out of the system. They are experienced and knowledgeable in digital counting systems and they seem to take extra interest in seeing that the equipment is right when it leaves their factory.

STATINTL The first system is completely checked out and will be delivered to next week. The second system is wired and they will start checkout on it next STATINTL week. The second system should take about 2 weeks to check.